

## **Geochemical evaluation of Kathwai area coals, District Khoushab**

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The area is located on Khoushab-Kathwai-Nowshera Road. To determine the rank of coal, laboratory tests such as proximate analysis (moisture, volatile matter, fixed carbon and ash), ultimate analysis (elemental composition of organic fraction on weight percent basis; carbon, hydrogen, oxygen, nitrogen and sulfur), heating value, hard groove grindability index (HGI) and petrographic analysis were carried out. The basic knowledge and understanding of coal structure, crucial to understanding of the physical properties of coal and chemistry of conversion processes such as gasification, liquefaction, combustion and carbonization, is gathered through petrology and petrography of the samples. The petrographic analysis of the coal sample was carried out by using the Olympus BX51 microscope, equipped with polarizing accessories, a research grade instrument designed for analytical investigations. Macerals were observed under refracted light. Coal fragments were polished down to less than half a micrometre before they were observed under the microscope. From the results obtained through chemical analysis and petrography (i.e. microscopic and macroscopic study), it is finally concluded that the given coal sample belongs to sub-bituminous rank with grade-A and is suitable for use in power generation and cement industry, after blending it with the coal having low sulphur content and high HGI value.